The Constellation Project: Access to Medical Reference Information Using Personal Digital Assistants*

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The information needs of health care workers include access to not only clinical data, but educational resources, decision aids, and other professional and practice information. It has been shown that most of these information needs are not easily met by currently available material [1,2]. Analysis of access to CD ROM-based medical information has been analyzed by Osheroff et al [3]. This study illustrated only 62% of clinicians' questions could be resolved with this type of reference tool. New developments in personal digital assistant (PDA) technology make it possible to provide reference material and other information to clinicians where and when needed.

CONSTELLATION PROJECT

The Constellation Project is developing and evaluating the use of PDA-based information retrieval tools in two large Harvard-affiliated hospitals. PDA use is monitored by a program that records an audit trail of all transactions. This audit trail is later collected for utilization analysis. Constellation is a two-phased project as described below:

Phase I

We developed a program to convert content text documents into files that are compiled and downloaded into a PDA (Newton computer, Apple Computer, Inc., Cupertino, CA). In addition, we developed a PDA application for navigating and displaying these text files. We are placing several medical reference texts onto the PDA. These resources include the American College of Physician's (ACP) *Medical Knowledge Self Assessment Program IX, ACP Journal Club, Brigham and Women's Resident's Handbook*, and other material. In addition, we developed a specialty medical calculator to perform standard calculations relevant to general internal medicine and intensive care medicine. This portion is now complete and is the subject of the demonstration.

Evaluation of PDA use of these tools and content will be carried out during project deployment in the second half of 1994. Subjects will be medical residents at the Brigham and Women's Hospital and the Massachusetts General Hospital. A questionnaire (both electronic and paper) will be administered throughout the trial period as well as an analysis of the audit trail. The goal of this evaluation will be to assess how the PDA and its content will affect the ways house officers use reference information.

Phase II

Phase II of Constellation will create a link to the Brigham and Women's Hospital Clinical Information System with participation of the Information Systems department. This link will create a two-way dialogue between PDAs and IS servers. Uses of this link will include client-server requests for clinical data, educational material, resident sign-out procedures, and order entry via a wireless connection. Phase II feasibility studies are ongoing with implementation projected for late 1995 or early 1996.

DISCUSSION

Paper-based resources are useful for reference but are inconvenient to carry around the hospital or into the examination room. PDA technology places large textbooks on a small, light-weight memory card (about the size of a credit card). With potential wireless connectivity, PDAs will also be able to access non-local information. Our goal is to study the interactions between PDAs and medical house staff in two institutions. We hope to learn how access to this new information paradigm will affect the work-habits of the participants. We do not believe that it will ultimately be practical to store libraries of educational material on the portable devices themselves. Toward that end, as wireless communication facilities become more robust, we will adapt PDAs for use in client-server environments to access both education and decision support resources as well as clinical data.

REFERENCES

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